

What I claim is:

1. A method for transmitting digital information in a data communication system

Comprising:

- providing an input data sequence;
- converting the input data sequence into an input symbol sequence;
- multiplying the input symbol sequence by a non-orthogonal over-determined transmission matrix to produce a transmit symbol sequence;
- modulating and up-converting the transmit symbol sequence using a modulator and up-converter;
- transmitting the transmit symbol sequence in response to the modulating and up-converting;
- receiving said transmit symbol sequence;
- down-converting and demodulating said received symbol sequence;
- excising corrupt symbols in the received symbol sequence in response to the downconverting and demodulating to produce a truncated received symbol sequence and excised corrupt symbols;
- creating an inverse recovery matrix based on said excised corrupt symbols;
- multiplying the truncated received symbol sequence by the recovery matrix to produce an output symbol sequence;
- converting the output symbol sequence into an output data.

2. A method for transmitting digital information in a data communication system

Comprising:

- providing an input data sequence;
- converting the input data sequence into an input symbol sequence;
- multiplying the input symbol sequence by a non-orthogonal over-determined matrix to produce an intermediate transmit symbol sequence;
- converting the intermediate transmit symbol sequence with an inverse Fourier transformer to a transmit symbol sequence;
- modulating and up-converting the transmit symbol sequence;
- transmitting the transmit symbol sequence in response to the modulation and up-converting;
- receiving a received symbol sequence responsive to the transmitting;
- down-converting and demodulating the received symbol sequence;
- converting the received symbol sequence with a Fourier transformer to frequency domain symbols in response to the down-converting and demodulating;
- excising corrupt symbols in the frequency domain symbols to produce excised symbols;
- creating a recovery matrix based on said excised symbols;
- multiplying the frequency domain symbols by the recovery matrix to produce an output symbol sequence;
- converting the output symbol sequence into an output data;

3. A method for transmitting digital information according to claim 2 further comprising a step of adding a guard interval to said frequency domain symbols before the transmitting step.
4. A method for transmitting digital information according to claim 2 further comprising a step of combining frequency domain symbols after the step of excising.